OKANOGAN AND WENATCHEE NATIONAL FORESTS ROADS ANALYSIS

Executive Summary

Introduction

A national shift in environmental awareness has increased attention to roads issues and roads' effects on ecosystems. Funding for road maintenance has decreased. We must find a balance between the need for access and the potential environmental risks of a deteriorating road system. Beginning in 2001, the Okanogan and Wenatchee National Forests conducted forest-wide roads analyses based on "Road Analysis: Informing Decisions about Managing the National Forest Transportation System" (USDA FS 1999).

This roads analysis is complete and meets the national direction to conduct a forest level Roads Analysis (Forest Service Manual 7712.15). It is not a decision-making process. The objective is "to provide line officers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions" (USDA FS 1999). The strategies and recommendations developed by this analysis will be incorporated into future project-level decision-making analysis.

This roads analysis

- addresses the effects of roads on biological, social, and economic factors.
- identifies opportunities and strategies that move us closer to the goal of an affordable, efficient road system that meets the needs of the public and the USDA Forest Service and also has minimal impact on the environment.
- includes previously completed plans, analyses, and decisions.

The analysis is a science-based interdisciplinary process using existing information and inventories. The current road system condition was analyzed in terms of desired conditions, including the amount and type of access, and impact and risks to the ecosystem.

Recommendations

Recommended Strategies and Estimated Savings

Table 1 shows the number of segments recommended for each strategy by sub-basin. Miles are shown in parentheses.

Table 1. Summary of recommended strategies

Sub-basin	Major repair	Minor repair	Leave as is	Lower maint.	Stabil./ leave	Decom.
Chelan	6 (31)	5 (53)	9 (50)	1 (1.5)	0	1 (0.3)
Entiat	9 (54)	13(76)	24 (65)	0	0	2 (5.4)
Methow	10 (80)	11 (68)	16 (89)	7 (50)	0	0
Naches	9 (47)	12 (52)	40 (286)	12 (46)	1 (5)	3 (17)
Tonasket	2 (3)	5 (28)	27 (136)	5 (18)	0	0
Upper Yakima	14 (93)	29 (170)	14 (44)	20 (59)	0	0
Wenatchee	5 (30)	24 (75)	11 (59)	2 (9)	0	0
Total	*55 (335)*	*99 (522)*	*141 (729)*	*47 (184)*	*1 (5)*	*6 (23)*

If all the recommended strategies were fully implemented, the cost per year to maintain these roads to full standards would generally decrease for each Ranger District. However, a substantial amount would be needed to make all the repairs, improvements, and decommissioning recommended to fully implement all the strategies. At this time, the specific projects needed to implement these strategies are not sufficiently detailed to develop cost estimates. On roads for which we share easements, the partner must be consulted and agree to any changes in road management. It is important to note that these dollars reflect the needs to maintain only the roads analyzed to the standards defined in the Forest Service Manual (FSM). Much less is currently being spent.

Table 2 shows the estimated savings in maintenance costs per year to the districts if all the recommendations were implemented.

Table 2. Estimated saving

Sub-basin	Estimated savings ($)
Chelan	- 70,000
Entiat	4,000
Methow	147,600
Naches	136,000
Tonasket	145,000
Upper Yakima	85,000
Wenatchee	31,300

Minimum Affordable Road System and Cost Comparison

The Forest Service defines the minimum affordable road system as the miles of road by maintenance level that can be maintained to full standard with the anticipated maintenance funding. Based on forest average maintenance costs, maintaining all the system roads on the Okanogan and Wenatchee National Forests would take approximately $11,786,500 annually. This does not include costs of identified deferred maintenance, maintenance needed to bring the road back up the FSM standard, or the funds needed to improve fish passage by repairing or replacing barrier culverts.

In Fiscal Year 2000 approximately $1,028,000 (9%) of the estimated annual need was expended on roads maintenance in the Okanogan and Wenatchee National Forests. However, to address high priority needs, work was distributed over a greater mileage rather than focused on maintaining a small percentage of the roads to full standard. Table 3 shows the breakdown by Ranger District of the estimated cost to fully maintain all the roads to standards compared to what they received and what that percentage is.

This roads analysis demonstrates that there are many more miles of roads than can be fully maintained with the expected funding. However, a rapid reduction in accessible road mileage is unacceptable to a large segment of Forest users, would not meet agency management access needs, and would incur significant expenses to properly implement.

Table 3. Cost comparison

Sub-basin	Cost to fully maint. to standard ($)	Amount received in FY 2000 ($)	%
Chelan	37,000	84,000	23
Entiat	984,000	84,000	9
Methow	2,703,000	210,000	8
Naches	2,220,000	310,000	14
Tonasket	1,844,500	210,000	11
Upper Yakima	2,295,000	300,000	13
Wenatchee	1,370,000	210,000	15

This roads analysis does not recommend that many segments be decommissioned. Future studies that will analyze the local roads (those maintained for high clearance vehicles) may recommend decommissioning some roads in an effort to adjust the size of the road system.

The Roads Analysis Process

This is the first of a three-phase process to analyze all the roads on the Okanogan and Wenatchee National Forests. The next phases will be separate documents and completed as time and funds are available. The second phase will be at the watershed scale: all roads within the watershed will be considered. The third and final phase will be at the specific project scale. The first two phases (sub-basin level and watershed level) develop recommendations, and are not decision documents. The final phase, at the project scale, will be at the decision-and-implementation level. A watershed is the area drained by a distinct stream or river system and separated from other similar systems by ridgetop boundaries. A basin or sub-basin is a larger scale and can contain a few watersheds or several watersheds depending on topography.

The analysis process examines the major arterial and collector roads within the watersheds. Generally the major arterials and collector roads are the Maintenance Level 3, 4 and 5 roads. These roads are maintained open and to a standard that a prudent driver in a passenger car can travel. Some Maintenance Level 2 roads were included; these are roads maintained open and to a standard a high clearance vehicle can travel. The roads were

segmented according to their maintenance level and the watershed in which they are located.

Roads Ratings

After the roads were segmented, they were rated on criteria in three modules: Human Use, Aquatics, and Wildlife. The Aquatic and Wildlife modules document the effects of roads on biological factors; the Human Use module addresses the effects of roads on the social and economical factors. The specific criteria in each module are described in the appendices. Unclassified roads were not considered in this analysis, but will be included in future watershed scale analyses.

Each module developed a "High," "Moderate," or "Low" rating for each road segment. The three ratings were used to develop a recommended management strategy for that road segment. Management strategy options ranged from major improvements to some form of decommissioning.

Each watershed within the sub-basins was given an overall rating for each module. This rating was used to develop the recommended priorities and sequence for conducting the watershed scale of the roads analysis process. Information from the completed road analysis will be used in several ways:

1. The compilation of the sub-basin level analyses will contribute to the comprehensive forest-wide road management strategy.
2. More detailed watershed-scale analyses will tier to the sub-basin data and recommendations.
3. Scheduled Land and Resource Management Plan (Forest Plan) revisions will use the analyses results in setting long-term management direction for the road system across the three forests. The forest plan revision is scheduled to begin in the spring of 2003.

Treatment Strategies

The range of recommended treatments or strategies for each road segment fit into five general categories ranging from major improvements to decommissioning. The five categories are described below.

Treatment strategy	Description
Major repair of improvement	Can include but are not limited to: relocation, replacing a major culvert, or seasonal closure.
Minor repair or improvement	Can include but are not limited to: minor surfacing or grading work, drainage improvements (such as adding cross drains or drain dips), or seasonal closures.
Leave as is	Current maintenance standards would be maintained with no change.
Lower maintenance requirements	Reduce the current maintenance standard to the next lower standard. For example, a maintenance level 3

Treatment strategy	Description
	road, maintained for passenger cars would be reduced to a road with a maintenance level 2, which is maintained for high clearance vehicles.
Stabilize then eliminate maintenance	Stabilizing the road, for example by out-sloping, installing water bars, removing culverts where possible, then inspecting the road periodically to monitor for any damage.
Decommissioning	Can involve a range of treatments from ripping and seeding the surface to full obliteration.

Users will notice little change in the short term on the roads with recommended strategies of "lower the maintenance requirements" or "eliminate maintenance after the road is stabilized." The road will be allowed to reach the new standard over time.

Areas Analyzed

Chelan Sub-Basin Analysis Area

The Chelan Sub-Basin is made up of the Chelan Watershed and a portion of the Columbia Watershed. The area of the sub-basin that was analyzed is 377,000 acres; approximately 252,000 acres (66%) of these are in wilderness and inventoried roadless areas. The area contains approximately 332 miles of classified Forest Service Roads (FSRs); 133 miles of these will be analyzed. The remaining miles are roads maintained for high clearance vehicles (Maintenance Level 2 roads) or are closed roads (Maintenance Level 1).

Entiat Sub-Basin Analysis Area

The Entiat Sub-Basin is made up of three watersheds: Mad River, Entiat River, and a portion of the Columbia Breaks Watershed. The area of the sub-basin that was analyzed is 258,000 acres, of which approximately 125,000 acres (48 %) are in wilderness or inventoried roadless areas. The area contains approximately 1,100 miles of classified FSRs, of which 201 miles will be analyzed.

Methow Sub-Basins Analysis Area

The sub-basin boundaries closely correspond to the boundaries of the Methow Valley Ranger District on the Okanogan and Wenatchee National Forests. The Methow Valley Ranger District has twelve watersheds, however four are totally within the Pasaytan Wilderness and therefore have no roads. Highway 20 is the only major road within Granite or Bridge Creek Watersheds. The remaining watersheds--Upper and Lower Chewuch (combined into the Chewuch), Upper Methow, Middle Methow, Lower Methow, and Twisp--are included in this analysis. The area of the sub-basin analyzed is 1,334,654 acres, of which 877,552 acres (66%) are in wilderness and inventoried roadless areas. The area contains approximately 1,588 miles of classified FSRs, of which 287 miles of major arterials and collectors were analyzed.

Naches Sub-Basin Analysis Area

The sub-basin boundaries basically follow the boundaries of the Naches Ranger District.

The Naches Sub-Basin is made up of seven watersheds. All of the watersheds contain arterials or collectors and were included in the analysis. The area of the sub-basin being analyzed is 515,840 acres, of which 304,600 acres (59%) are in wilderness and inventoried roadless areas. The area contains approximately 1,550 miles of classified FSRs of which 450 miles were analyzed.

Tonasket Sub-Basins Analysis Area

The Tonasket Ranger District manages land within four sub-basins and 12 fifth-field watersheds. Two watersheds are within the wilderness and have no roads. The area of the sub-basin being analyzed is 363,132 acres, of which 198,766 acres (50%) are in wilderness and inventoried roadless areas. The area contains approximately 1,212 miles of classified FSRs, of which 180 miles of major arterials and collectors were analyzed.

Upper Yakima Sub-Basin Analysis Area

The sub-basin boundaries closely correspond to the boundaries of the Cle Elum Ranger District on the Okanogan and Wenatchee National Forests. The Upper Yakima Sub-Basin is made up of 7 watersheds: Manastash, Taneum, Naneum, Yakima, Cle Elum, Swauk and Teanaway. The area of the sub-basin that is being analyzed is 375,531 acres, of which 221,787 acres (59%) are in wilderness and inventoried roadless areas. The area contains approximately 1300 miles of classified FSRs of which 343 miles will be analyzed

Wenatchee Sub-Basin Analysis Area

The sub-basin boundaries closely correspond to the boundaries of the Lake Wenatchee and Leavenworth Ranger Districts on the Okanogan and Wenatchee National Forests. The Lake Wenatchee and Leavenworth Ranger Districts have seven watersheds, all of which contain Maintenance Level 3, 4, or 5 roads. Approximately 79.1 miles of maintenance level 2 roads were also included because they serve as major collector roads despite their maintenance level. The area of the sub-basin analyzed is 792,871 acres, of which 483,334 acres (61%) are in wilderness and inventoried roadless areas. The area of the sub-basin contains approximately 1,409 miles of classified FSRs, of which 170 miles were analyzed.

Works Cited

U.S.D.A. Forest Service. 1999. Roads analysis: Informing decisions about managing the national forest transportation system. Misc. Rep. FS-643. Washington Office, Washington, D.C., U.S.D.A. Forest Service. 222 p.